FOOD NEWS

FOR CONSUMERS

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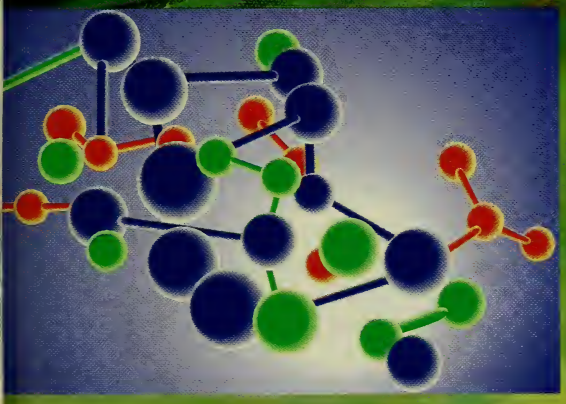

Researching a Safer Food Supply

FOOD NEWS
FOR CONSUMERS

Winter 1991
Vol. 7, No. 4

Food News for Consumers is published by USDA's Food Safety and Inspection Service, the agency charged with ensuring the safety, wholesomeness and proper labeling of the nation's meat and poultry supply. The magazine reports how FSIS acts to protect public safety, covering research findings and regulatory efforts important in understanding how the agency works and how consumers can protect themselves against foodborne illness.

Assistant Secretary for Marketing and Inspection Services
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FSIS Administrator
Lester M. Crawford

Associate Administrator
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Assistant Administrator
Catherine E. Adams

Director, Information and Legislative Affairs
David B. Schmidt

Chief, Public Awareness
Laura Fox

Editor
Mary Ann Parmley
202/447-9351

News Wires Editor
Liz Lapping

Art Director
Julie S. Olson

Production
Maxine Grant

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Editor, Food News for Consumers,
FSIS/ILA, Room 1165 South,
U.S. Department of Agriculture,
Washington, DC 20250,
Telephone: (202) 447-9351.

The People Behind the Advances in Food Safety

A Message from FSIS's Administrator Dr. Lester M. Crawford

I am pleased to introduce the second annual *Food News* issue designed to explain how we use advances in science to produce safer meat and poultry products. This message is particularly important at a time when headlines everywhere remind us that the integrity of the food supply continues to be a national concern.

Further, I welcome the chance to say how proud I am of the USDA men and women whose accomplishments are presented here. To name just a few, Dr. Lattuada's microbiology team in Beltsville, Maryland, developed the new 8-hour test for botulinum toxin, and Dr. Robert Buchanan's laboratory team at Philadelphia's Eastern Research Center has taught a computer to predict pathogen growth in food products. These advances represent the vanguard of public health research. Both projects are mentioned in the "Adding to Science" story, p. 10.

There are a host of other outstanding USDA researchers of course. But their work would have far less impact without the efforts of other Agency personnel who turn research results into food safety programs. This includes those who speak directly to consumers.

I'm thinking of the fourteen home economists on FSIS's Meat and Poultry Hotline. These specialists heard from 80,000 consumers last year with basic questions about food handling. Since we know that just under half of foodborne illness occurs in the home, the Hotline function is vital in preventing many serious incidents (story p. 4).

We applaud the efforts of Dr. Richard Carnevale and his staff in keeping harmful residues out of meat and poultry (p. 6) and the biotechnology researchers at work on new animal drugs, tests and cures (p. 12). The list goes on and on.

From new ideas, after all, come the solutions to enduring problems.

Dr. Lester Crawford, administrator of USDA's Food Safety and Inspection Service, is a veterinarian with a doctorate in pharmacology. Dr. Crawford serves as the U.S. coordinator of the Codex Alimentarius Commission, a United Nations group that sets standards for food safety around the world. He was previously director of FDA's Center for Veterinary Medicine.

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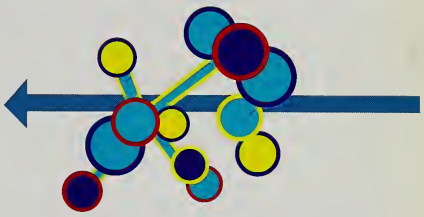


Food Safety

News Wires

USDA's Meat and Poultry Hotline Links Scientists and Consumers

by Dianne Durant

Some 80,000 callers a year check with USDA's Meat and Poultry Hotline for safe food handling advice on everything from how to stuff the turkey to when to discard leftovers.

"But the Hotline *also* does another job," says manager Sue Templin, with USDA's Food Safety and Inspection Service (FSIS). "Since we started five years ago, we've evolved into an open line between consumers and scientists." Through the Hotline, says Templin, "consumers stay in touch with the latest research on food safety while government scientists are given a window on the everyday problems consumers have with food."

How does this work?

Take a look at the case of the professional caterer who called the Hotline perplexed by her bright red *fully cooked* meatballs.

Bessie Berry (l) and Sue Templin (r), Hotline supervisor and manager, discuss the day's schedule.

"Are they done?"

"Are they done?" the caterer asked.

Hotline researcher Bessie Berry knew there could be several reasons for fully cooked meat to retain a red color.

She told the caller that studies show that when meat keeps a red or pink tinge even after thorough cooking, it may be related to the meat's leanness or acidity.

Food scientists have also found that cooking meat with some vegetables, like onions, *can* affect the color if the vegetable has high amounts of naturally occurring nitrites.

Still, if meat is thoroughly cooked, it's generally safe to eat. Cook red meat to 160° F, poultry to 180° and fish until it flakes with a fork.

"Jumping Salmonella"

Sometimes new studies contribute to consumer confusion. That's what happened in the case of the "jumping salmonella."

"What'll I do?" asked the caller. "I think salmonella from my chicken may have jumped to my kitchen curtains!"

The caller had just read a newspaper article citing a study that rinsing chicken before cooking *could* spread salmonella contamination.

After finding the study through a state university, the Hotline staff reassured the caller that salmonella bacteria can't "jump."

Salmonella and other bacteria *can* be spread, though, if you don't thoroughly wash with hot, soapy water anything that comes *in touch* with raw food, including raw meat and its juices. This includes your hands, utensils and countertops.

Encephalitis Excitement

The headline read "Encephalitis Discovered in Local Chickens."

Calls started coming in.

"What's encephalitis?" "Does this mean my chicken dinner can make me sick?"

Human encephalitis is a virus normally spread by mosquitoes. Accompanied by fever and chills, it can be serious.

When the calls starting rushing in about what kinds of foods families could safely send their loved ones stationed in Saudi Arabia, the Hotline staff knew a major new issue had to be addressed.

Karen Tracey (standing), Hotline supervisor, confers with Nancy Connor.

While the Hotline staff didn't think anyone could get encephalitis from eating chicken, they did check with FSIS epidemiologists. As they thought, and could now reassure callers, the answer was that the virus in chickens can't be transmitted to humans under any circumstances.

Shaping Food Policies

Linking consumers with a network of food scientists not only creates good communication, but it can also shape new food policies.

The recent appearance of the *Salmonella enteritidis* bacteria in fresh, unbroken eggs created some unique problems because of the wide variety of foods in which eggs are used.

The Hotline staff, using consumer questions as a guide, worked with scientists from USDA's Animal and Plant Health Inspection Service, Cornell University and the food industry to develop new guidelines on the safe use of eggs in everything from beverages and frostings to homemade pastas and meringue baskets.

In short, the Hotline's egg advice is that eggs and egg products are safe when thoroughly cooked. Yolks and whites should be firm and egg dishes should reach 160° F.

In another instance, consumer calls questioning the safety of pre-stuffed turkeys alerted the Hotline staff to potential public health problems.

Hotline staff checked with agency microbiologists to pinpoint hazards and followed up with food industry representatives.

Working through the Food Marketing Institute, the Hotline issued guidance recommending against pre-stuffing fresh, whole turkeys and provided detailed steps on safe handling for both retail stores and consumers.

This fall when the calls starting rushing in about what kinds of foods families could safely send their loved ones stationed in Saudi Arabia, the Hotline staff knew a major new issue had to be addressed.

Conferring with FSIS food scientists, the military and the U.S. Postal Service, the Hotline issued a press release on packing and mailing guidelines.

Newspaper and television coverage of the release prompted still more calls, showing once again how useful FSIS's Meat and Poultry Hotline is in *connecting* consumers with information they want. ❊

How to Call the Hotline

Weekdays 10 a.m. to 4 p.m. (EST), call 1-800-535-4555. Washington D.C. area residents dial 202-447-3333.

The USDA Hotline Team

USDA Hotline home economists have diverse backgrounds. The staff includes former nutrition educators, public health and community nutrition experts, a consumer advisor, microwave cooking specialists, a syndicated nutrition columnist and registered dietitians with nursing home and hospital experience.

The Experts Behind the Hotline

Within FSIS, Hotline staff are backed up by agency scientists and professionals who are expert in subjects from microbiology, food technology and foodborne illness to food additives/residues, food composition and labeling.

Hotline staff also consult with USDA experts in other agencies and rely on the extensive holdings of the National Agricultural Library for scientific source information.

Finally, Hotline staff work with other federal food experts, food industry scientists and a national network of food scientists and researchers at universities throughout the country.

An Interview with Dr. Richard Carnevale on Residue Control in Meat and Poultry Products

by Marjorie Davidson

Dr. Richard A. Carnevale heads the Residue Monitoring and Control Program. The program, part of the Science and Technology Branch in USDA's Food Safety and Inspection Service (FSIS), screens for illegal residues in domestic and imported meat and poultry products.

Dr. Carnevale received his degree in veterinary medicine from the University of Pennsylvania. Prior to coming to FSIS, he worked at the Food and Drug Administration's Center for Veterinary Medicine.

***Food News** recently talked to Dr. Carnevale about how FSIS acts to protect consumers from residues in their food.*

Q ***Surveys show some consumers are concerned about the dangers of drug, chemical and pesticide residues in meat and poultry products. Is this fear warranted?***

A Scientific tests indicate that consumers run little risk of health effects from residues in meat or poultry.

Every year the Food Safety and Inspection Service (FSIS) conducts more than 1 1/2 million analyses for residues, and less than 1 percent of all these tests show illegal residues. And that violation rate has been steadily declining over the last decade. There has, in fact, been no evidence of a single serious health effect from residues in meat or poultry in the last 20 years.

Q ***Who sets the standards for these tests?***

A The Food and Drug Administration (FDA) approves animal drugs, specifies their uses and sets tolerances or limits for their residues in food. The Environmental Protection Agency (EPA) does the same for pesticides.

These agencies are very conservative in setting tolerances. They provide a safety margin that is usually many hundreds of times lower than the level that might harm people. In most instances, even when residues are found in meat and poultry above the legal level, it doesn't mean the products are not safe since the standard is set so high.

Q ***Why are drugs and agricultural chemicals used at all if they can leave residues?***

A Vaccines, antibiotics and other animal drugs help improve animal health. As they are being raised, some animals may need drugs to combat a specific problem. Some producers also administer drugs at low, "subtherapeutic" levels to prevent disease. Treated animals must be kept from market for a prescribed "withdrawal period" until the drugs have worked through their systems.

Pesticides are used to control pests that in former years would have destroyed an entire season's crops. Their use has enabled greater production of wholesome, appealing food.

Sometimes pesticides or other chemicals can accidentally be introduced into animal feed. Animals such as chickens or hogs may transfer certain residues to each other through their feces.

Q ***How do you respond to those who claim the residue problem would end if agricultural chemicals were banned?***

A As a result of public concern, we now have a very strict standard of safety in the way agricultural chemicals are controlled. Without a comprehensive registration and control system for safe agricultural chemicals, users might resort to unsafe methods.

There would also be more animals lost to disease if the use of animal drugs was prohibited. The resulting need to raise greater numbers of animals for market would increase the

cost of meat and poultry products at the grocery store.

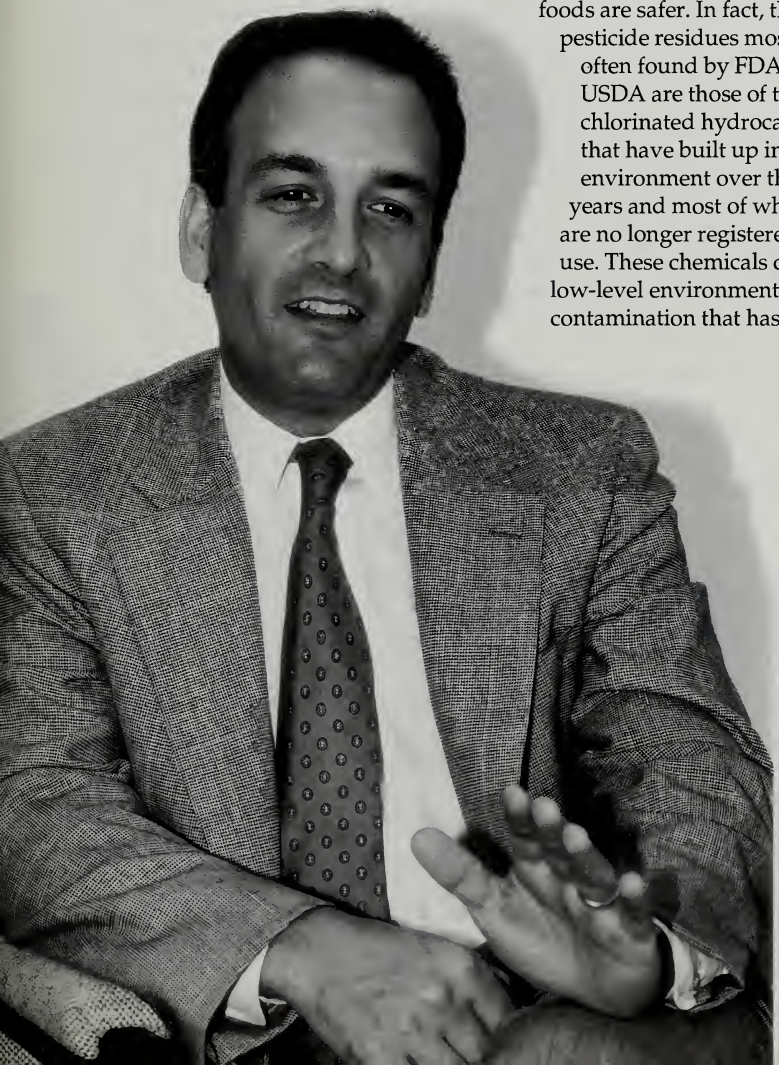
Q ***How do you know who's responsible when there is an outbreak of residue violations?***

A We use the Residue Violation Information System (RVIS), a nationwide interagency computer information system that allows FSIS and the Food and Drug Administration to trace residue violations to their source and to eliminate the problem. Information on violations is entered into RVIS and is immediately available to all users. The system is flexible enough that investigators are able to pinpoint individuals with multiple violations even when they have used deception to avoid detection, such as changing their names and addresses.

This data assists technical staffs in reviewing and assessing potential long-term residue problems as well. For example, a detailed report covering several years of residue violations can be useful in formulating public policy concerning use of the substance.

Q ***Are organic foods safer than other foods?***

A No. Some people would advocate eating organic foods—foods that are produced without the use of drugs or pesticides—because it reduces contamination to the environment. However, there is no reason to eat organic foods, or to pay more for them, on the presumption that such foods are safer. In fact, the pesticide residues most often found by FDA and USDA are those of the chlorinated hydrocarbons that have built up in the environment over the years and most of which are no longer registered for use. These chemicals cause a low-level environmental contamination that has steadily declined. There is no reason to believe that certified organic meat and poultry would not also contain low levels of these same chemicals.



Q ***What can consumers do to reduce exposure to residues that might be present in meat and poultry?***

A If, despite the assurances about the testing of meat and poultry products, consumers are still concerned about residues, there are some precautions they can take. The first is to trim fat from meat before eating. If certain pesticide residues are present, they are likely to be concentrated in fat. Another precaution is to eat only small amounts of kidneys, livers, and other organ meats. Certain residues concentrate in these organs. Finally, follow what is good nutritional advice as well. Eat a moderate, balanced diet, with plenty of variety. Include lean meat, poultry, fish, eggs and other protein sources. ❊

Further information about residues can be found in FSIS's new publication ***Meat and Poultry Safety: Questions and Answers About Chemical Residues.*** *To request a copy write FSIS, Room 1165 South Building, Washington, D.C. 20250.*

Adding to Science

FSIS-Sponsored Basic Research on Food Safety

by Mary Ann Parmley

It's been said that science consists not so much in having the right answers as in asking the right questions.

Why? Because the trick, theorists say, is always to leave the door *open* a bit on our ignorance. This is vital since respect for what we don't know protects us from quick answers which all-too-often just support our theories.

Certainly, FSIS researchers and those in cooperating institutions exhibit that kind of dedication daily, because the answers in food safety are not easy. They're not easy to arrive at scientifically. Often, answers on food safety issues are not black or white, but must be decided on the basis of a preponderance of evidence rather than on definitive conclusions.

Plus it's far from easy when there are outbreaks of foodborne illness and everyone wants answers *yesterday*.

Still the quest continues. This story outlines a sampling of the basic research efforts FSIS currently has underway.

Microbial Control

Viewing salmonella control in poultry as starting on the farm, researchers at the FSIS Beltsville, Md. lab, working with Dr. Edward Mallinson, a USDA Extension veterinarian, developed a "swab" test for detecting salmonella levels in the chicken coop.

The test, which can be run with minimal training, involves dragging a specially moistened large gauze pad across the litter in the coop. The sticky swab absorbs salmonella cells. The swabs are incubated overnight in a special solution and streaked on treated growth plates the next day.

This simple, inexpensive method also ensures more accurate salmonella counts. Principal FSIS investigator: Russell Miller, l-301-344-1820.

Listeria monocytogenes, a problematic foodborne bacteria that grows (slowly) at refrigerator temperatures and can have serious consequences in individuals with weakened immune systems (i.e., the elderly, pregnant women and the chronically ill), is the focus of several FSIS studies.

USDA's Agricultural Research Service is studying ways to keep *L. monocytogenes* from growing during refrigeration. These include adding salt and nitrates to foods, decreasing moisture or modifying pH (acid-base) levels.

The National Centers for Disease Control (CDC), Atlanta, is working with both FSIS and the Food and Drug Administration in an epidemiological study of *L. monocytogenes*.

In a given outbreak, CDC would conduct a "refrigerator" survey to test the food in the refrigerator of an individual who's contracted listeriosis. If CDC identified the causative strain in a meat or poultry product from the patient's refrigerator, FSIS would try to trace the problem back to the plant that supplied it. The plant would then be required to undertake a painstaking review of its operations to eliminate the source of the contamination.

For more information, contact: Susan Rehe, FSIS Information Office, l-202-447-9113.

In what may rank as FSIS's microbial coup of the year, an FSIS research team in Beltsville, Md. capped three years of work with a new 8-hour test for botulinum toxin—the cause of botulism—that detects extremely low levels of the toxin in suspect food samples.

Says team leader Dr. Charles Lattuada, "This is a major public health breakthrough in that anyone exposed to botulism needs immediate medical attention. Now, within eight hours, we can tell whether patients have been exposed. The test results are also machine-readable, which is a boon since the computer "sees" faint color variations not obvious to the human eye. This is critical since, in this test, botulinum-contaminated food turns a test plate yellow, and the higher the yellow tones, the higher the toxin levels." Information contact, Hedy Ohringer, FSIS Information, l-202-447-9113.

Residue Control

Less significant from a public health standpoint than bacterial contamination, but still of great concern to FSIS is keeping unwanted chemicals out of consumer foods.

Dr. Richard Ellis, director of FSIS's chemistry division, says, "We're looking at how food animals metabolize drugs used to treat them. The intent is to try to identify what kinds of breakdown chemicals or metabolites form in an animal's body after you've given it an antibiotic for example. This is extremely important because the better we understand metabolite chemistry, the better we can keep illegal drug and pesticide residues out of tissue that becomes human food."

The chemistry division is also directing research to develop quicker tests for residues in meat and poultry products. This involves exploring a number of fast, inexpensive alternative methods such as detecting residues by the effect they have on enzyme reactions and using animal matter other than flesh to test for the presence of residues.

"For example," says David Soderberg, one of the project coordinators, "our sulfamethazine test enables in-plant personnel to test urine, an easier procedure than preparing tissue samples for laboratory evaluation."

Soderberg continues, "Enzyme reactions and alternate tissue testing, we hope, will pave the way for new multi-residue tests. We need, for instance, to test for all sulfa-based drugs, rather than just one drug at a time." Information contact: Danielle Schor, FSIS Information, l-202-447-9l13.

Food Ingredient Research

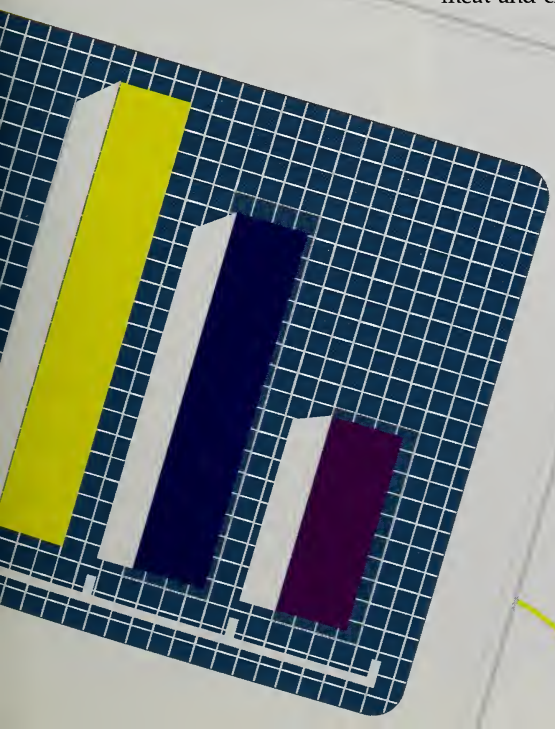
Robert Post, head of FSIS's product standards branch, says their current research centers on a project at USDA's Eastern Regional Research lab in Philadelphia. Investigators are considering how processors can enhance the safety of combination meat-and-cheese snack sticks.

Says Post, "This research is critical since without new lab findings on safe moisture, salt and pH levels, processors must use the existing standards for dried beef sticks." Post says the beef sticks may be more shelf-stable than meat-and-cheese sticks since they are drier. The addition of cheese makes the product wetter, and the more water something contains, the higher the risk of bacterial growth. Contact: Robert C. Post, l-202-447-7503.

At FSIS's Donald L. Houston Training Center—Educating Inspectors in the Latest Science

"Since the Center opened in March l989," says Dr. Travis H. Small, Jr., head of Training Center Operations, College Station, Texas, "we've worked cooperatively with our host school Texas A & M to develop some of the first 'hard' science courses—microbiolgy, toxicology, computer science, biotechnology, statistics—for personnel some of whom lack previous university training. The challenge is to present the material in a job-related context so they not only grasp it but also see the relevance to meat and poultry inspection."

Dr. Small reports that some 2,255 students, including FSIS inspectors, veterinarians, food technologists and plant representatives from other countries, have attended the Center in its first l5 months of operation. Contact: Dr. Travis Small, l-409-527-1433. ❊



Computer Troubleshooting

Now producers of meat, poultry, dairy products and seafood can use a computer program developed by Dr. Robert L. Buchanan in USDA's Agricultural Research Service to predict how well foodborne bacteria can grow in their products after packaging.

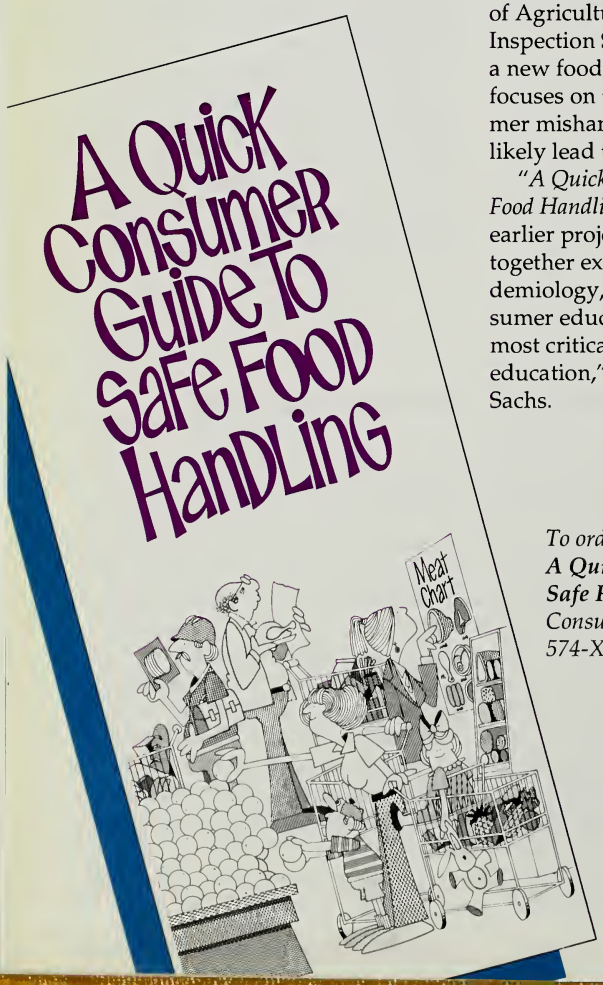
Says Buchanan, "With this user-friendly system, plant personnel can enter information on projected storage temperatures, the product's pH, salt and nitrite content and low oxygen conditions that encourage growth in some pathogens. The computer produces graphs on the comparative growth levels of six common food poisoning organisms that could shorten the product's useful shelf-life." Contact Dr. Robert Buchanan, Eastern Regional Research Center, Phila., Penn., 1-2l5-233-6620.

A NEW LOOK
at Food Safety Education

by Laura Fox

It's become an accepted part of common wisdom today that consumer education is vital to reducing the incidence of foodborne illness.

That conviction is echoed in National Academy of Sciences recommendations, the stated goals of the Healthy People 2000 initiative and the proceedings of the annual Conference for Food Protection.



Why? Because nearly 50 percent of the cases of foodborne illness result from consumer mishandling of food in the home. It is estimated there may be as many as 33 million cases of foodborne illness annually—many mistakenly thought to be the flu.

Just in economic terms the costs are great—between $3 billion and $8 billion in medical bills and loss of worker productivity each year.

Accordingly, the U.S. Department of Agriculture's Food Safety and Inspection Service has just published a new food safety brochure that focuses on those areas where consumer mishandling of food would most likely lead to foodborne illness.

"*A Quick Consumer Guide to Safe Food Handling* is one outgrowth of an earlier project in which FSIS brought together experts in microbiology, epidemiology, home economics and consumer education to determine the most critical needs in food handling education," said project leader Sharin Sachs.

To order single, free copies of ***A Quick Consumer Guide to Safe Food Handling,*** *write the Consumer Information Center, 574-X, Pueblo, CO 81009.*

For anyone interested in the full details, the project report called *A Margin of Safety: The HACCP Approach to Food Safety Education* is available from The FSIS Information Office, Room 1160 South Building, Washington, D.C. 20250.

Basically, the group focused on developing a Hazard Analysis and Critical Control Points (HACCP) approach to food safety education. HACCP involves taking a look at a process—such as home food handling—and identifying those critical control points, or steps, where failure to take an appropriate action is most likely to result in foodborne illness. The working group first conducted a literature search, including surveys on consumer knowledge and practice of important food safety procedures.

USDA's Meat and Poultry Hotline home economists identified all the ways consumers might mishandle food—from the time they buy it until the time they dispose of their leftovers—to create the potential for foodborne illness.

Then eleven nationally recognized food microbiologists and ten members of USDA's National Advisory Committee on Microbiological Criteria for Foods evaluated the ways consumers might mishandle food in terms of illness actually occurring as a result of their mistakes.

Finally, a panel of seven consumer experts assessed consumer knowledge and practice of safe food handling procedures.

Six main areas of consumer food handling were identified for inclusion in the publication. They are buying, storing, preparing, cooking and storing food and handling leftovers.

"In each section consumers will find quick and easy tips to follow," said Mary Ann Parmley, author of the new publication. "There are several underlying scientific principles that support our recommendations. These include proper sanitation, eliminating the opportunity for bacteria from raw food to come in contact with cooked foods, thorough cooking of food to kill bacteria, and keeping perishable foods out of room temperatures to reduce any possible bacterial growth."

In addition to the safe food handling information, *A Quick Consumer Guide* also includes a chart showing how long you can keep perishable foods in the refrigerator and freezer and one indicating safe internal cooking temperatures for meat and poultry products. From a safety point-of-view, one of the challenges facing consumers is keeping food cold when the power goes out. The brochure also explains how long food will keep in refrigerators and freezers without power, and what to do if the food has thawed.

Another question addressed is how to tell if an illness you've contracted is foodborne, and, if so, how to effectively report it to health officials.

While the publication is targeted to the general consumer, some people are more vulnerable than others to foodborne disease, generally because their immune systems are weakened. For them, safe food handling information is critical. Those at-risk include pregnant women and young children, those over sixty, and persons with weakened immune systems.

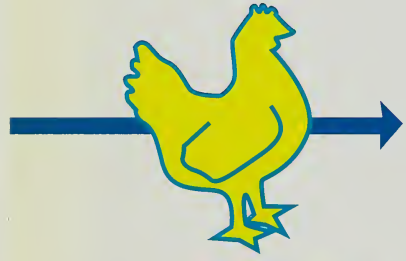
"Both for the general consumer and for people at special risk, the brochure aims at prevention," said writer Parmley. "By giving consumers information they need in a format they like, we hope they'll begin to modify their food handling behavior and reduce their risk of foodborne illness." ❊

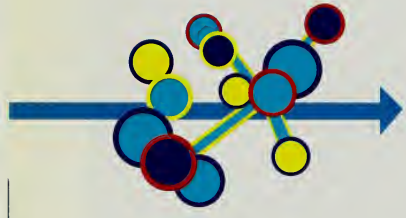
Where Consumers Make Food Handling Mistakes

Recent consumer survey results indicate that the way consumers say they handle food could lead to bacterial foodborne illness. Here are some findings from a 1988 Food Safety and Inspection Service/Food and Drug Administration telephone survey* of consumers.

What Consumers Say They Do	What Consumers Should Do
1. *On cleanliness*—About 25 percent of consumers would just rinse or wipe their hands, cutting board, or knife after handling raw meat or poultry.	**1.** *Cleanliness*—To prevent the spread of bacteria, hands, cutting boards and utensils should be washed in hot, soapy water after touching raw meat and poultry and before continuing foodpreparation.
2. *Thawing*—27 percent of consumers would thaw a turkey on the kitchen counter.	**2.** *Thawing*—Harmful bacteria grow rapidly at room temperatures. To prevent this, thaw all meat and poultry products in the refrigerator or microwave oven.
3. *Cooking*—25 percent would serve undercooked (rare or pink) hamburgers.	**3.** *Cooking*—Bacteria that can make you sick may be present in undercooked meat and poultry products. Always cook meat to 160° F and poultry to 180° F.
4. *Serving*—14 percent would leave cooked food at room temperature for more than two hours.	**4.** *Serving*—Bacteria will grow in cooked food left at room temperature for more than two hours. Always provide a heat or cold source for food that will not be refrigerated or kept on the stove.
5. *Refrigeration*—12 percent think fried chicken left on the counter overnight would be safe to eat without reheating, and 14 percent think reheating would make it safe to eat.	**5.** *Refrigeration*—Even though food is cooked, bacteria can still be introduced if it's left at room temperature long enough and can grow and cause spoilage or illness. Reheating will not destroy some toxins that can form.

**For more information on the 1988 Health and Diet Survey Cycle IV, call Dr. Jane Roth, director of the Policy Analysis Unit, USDA, Food Safety and Inspection Service 1-202-447-6735.*





MOVING INTO A BIOTECH WORLD

by Denise L. Clarke

Agriculture — you've come a long way baby.

Thanks to its marriage with biotechnology, agriculture is already in the 21st century. It promises to provide for the world's billions food that is not only tastier and more nutritious, but also produced in ways that lessen the reliance on pesticides and animal drugs.

The domestication of farm animals was a significant turning point in the development of agriculture, says Dr. David Berkowitz, head of technology transfer for USDA's Food Safety and Inspection Service (FSIS). "We then mechanized the farm and applied genetic know-how and new breeding methods to develop superior crops and animals.

"Today, our more sophisticated understanding of genetics, combined with the introduction of biotechnology, allows us to make strides in animal and plant improvements that would have taken generations of traditional breeding," Berkowitz adds.

Defining Biotechnology

Remember it this way: Biotechnology is the use of living things—plants, animals, bacteria—to manufacture products. You can produce food, drugs, diagnostic tests.

Biotech's advantages? "For animal production," Berkowitz explains, "traditional breeding has been hit-or-miss. But biotechnology is precise—you select the traits you want and 'genetically engineer' or introduce the gene that produces the desired trait into animals."

Biotech Foods

The first food product of biotechnology was approved by the Food and Drug Adminstration (FDA) earlier this year. Rennin, a natural enzyme widely used by the dairy industry to make cheese, can now be produced in a pure form by growing it with bacteria. Before biotechnology, a not-so-pure rennin was extracted from the stomachs of newborn calves.

In plant production, the U.S. Department of Agriculture, universities and companies are using biotechnology techniques to develop improved foods, including crops that naturally ward off pests and do not need pesticides, as well as naturally decaffeinated coffee beans, and firmer, better tasting tomatoes.

On the Animal Side

Biotechnology is expected to offer leaner pork, cattle that are protected from hoof-and-mouth disease and the ability to detect animal diseases.

The most recent biotechnology developments in animals include bovine somatotropin (BST) for use in dairy cattle and porcine somatotropin (PST) for swine. Both BST and PST are protein hormones naturally found in cattle and swine. With biotechnology, scientists can commercially manufacture BST and PST in the lab and use them in cattle and swine to improve growth, lean content and productivity.

While FDA has not yet approved the commercial use of BST in cattle, it has confirmed that milk and meat from cows treated with BST are safe. Tests have shown BST can boost milk production in dairy cattle by 10 to 25 percent.

Cornell University scientists have shown that pigs treated with PST grow faster and have up to 75 percent less fat—an important breakthrough for nutrition-conscious consumers who want leaner, low-fat foods. "The meat from PST-treated pigs is just as tasty in terms of flavor, aroma and juiciness," says Donald Beermann, associate professor at Cornell's College of Agriculture and Life Sciences. Phone: 1-607-255-2850.

Researchers are also finding ways to "clone" or copy livestock. University of Missouri researchers are trying to copy the best characteristics of pigs—such as large ham and loin and not too much fat—to develop animals for breeding purposes.

"As we're able to clone pigs with the most desirable traits, we'll be able to produce more pigs geared to consumers," says William Lamberson, University of Missouri animal scientist. Phone: 1-314-882-8234.

Houston's Granada Biosciences, the first company in the world to clone cattle, has introduced genes into cattle to improve growth and resist disease, therefore lessening the need for animal drugs.

The purpose of Granada's research is "to make food-producing animals more economical for producers to grow and more healthy for today's diet- and health-conscious consumers," says the company's chairman David Eller. Phone: 1-713-977-7000.

U.S. Department of Agriculture (USDA) researchers have bred chickens to resist the avian leukosis virus that costs U.S. egg producers $50 to $100 million a year. USDA also is studying how biotechnology can produce leaner, better-tasting chicken.

USDA researchers are also using biotechnology with dairy cattle to improve milk quality. They are studying how to make cow's milk more like human breast milk, so children who have problems with formula could use regular milk. USDA also is looking at changing milk's make-up so it doesn't form ice crystals and makes a better ice cream. Contact: Dr. Robert Wall, 1-301-344-2362.

While biotechnology promises exciting improvements in meat and poultry, the research is still slow and deliberate with a low success rate. Researchers studying animal biotechnology find many animals do not transmit the desired genetic change to their offspring.

Biotechnology and Food Safety

USDA's Food Safety and Inspection Service (FSIS) is responsible for ensuring the safety of meat and poultry products. FSIS, working with other government agencies, will regulate the production of food animals from biotechnology research. FSIS will examine the gene selected to obtain the desired trait, how the gene is introduced into the animal and the trait produced. Once the genetic changes are deemed safe, USDA inspectors will also employ traditional inspection methods to ensure food safety. ❋

For more information about biotechnology research and policies, contact Dr. David Berkowitz, FSIS, 1-202-447-8623 or Ms. Marti Asner, USDA Office of Agricultural Biotechnology, 1-703-235-4416.

Consumers "Cautiously Optimistic" about Biotechnology

An extension sociologist at North Carolina State University surveyed in early 1989 more than 700 rural nonfarm consumers, urban consumers, farmers and agricultural leaders on their opinions on biotechnology.

"The survey found interest in biotechnology is high, but understanding is low. People believe the products of biotechnology could be beneficial, but media coverage of possible food safety concerns could significantly sway public opinion," says Dr. Thomas Hoban, who conducted the survey. Hoban's survey shows:

- More than 75 percent of respondents said the use of biotechnology to develop new medicines and cures for disease and more nutritious foods was very desirable. Only a third, however, felt using biotechnology to produce larger or faster growing livestock was very desirable.
- Nearly half of consumers were very concerned about eating genetically engineered meat and dairy products, while only a third were very concerned about eating genetically engineered fruits and vegetables. However, almost half did not know they had already eaten hybrid fruits and vegetables.
- Almost 75 percent of respondents said too little biotechnology regulation posed serious risks to human health. Yet, more than half said too much regulation of biotechnology will hurt the competitiveness of American farmers and businesses.
- Almost 60 percent of the consumers agreed the potential benefits of biotechnology are greater than the possible risks.

For more information about the survey, contact Dr. Hoban at 1-919-737-2670.

NEWSWIRES

Promoting Concrete Health Goals

Choose health, America! That's the goal of a new 298-point plan released September 6, 1990 by Health and Human Services Secretary Louis W. Sullivan. The "Healthy People 2000" plan sets broad public health goals for the next decade. The three principal goals for the 1990s are to

- Increase the span of healthy life for Americans,
- Reduce health disparities among Americans and,
- Give all Americans access to preventive health services.

Quantifiable objectives have been set for improvements in 22 separate priority areas such as infant mortality, reducing smoking and encouraging people to exercise. The plan stresses the importance of personal responsibility for health.

"Healthy People 2000" also includes specific food safety goals:

1) Reducing infections caused by key foodborne pathogens like salmonella, campylobacter, E. coli and listeria,

2) Increasing consumer awareness and application of safe food handling practices, and

3) Expanding regulatory coverage of commercial and institutional food service.

The report stresses the important role the individual consumer plays in keeping food safe. Preventing food poisoning must begin when food is purchased in the supermarket and continue through storing, preparing, cooking, and serving food at home.

For more information on food safety call USDA's Meat and Poultry Hotline 1-800-535-4555, 10:00 a.m. to 4:00 p.m. Eastern Time, Monday through Friday. (Washington DC Area 202-447-3333).

—Pat Moriarty

Microwaving—Does Salt Shield Bacteria?

Uneven cooking has always been a concern with microwave ovens, and recent studies show salt could be a contributing factor.

In research done by Stephen Dealler and Richard Lacey from the University of Leeds, England, samples of mashed potatoes with varying amounts of added salt were microwaved. Those with the most salt did not get hot in the middle. This inadequate heating could permit the survival of harmful bacteria that could cause food poisoning.

The inability of the microwaves to heat the inner portions of the food may be due to some electrical activity on the surface of the food caused by the salt. Will this present any problems with foods that are high in salt? Will it be unsafe to heat or reheat these foods in the microwave?

"This question of the presence of salt in microwave foods and microwave food safety generally warrants further study," said Carl Custer, an FSIS microbiologist in the processed products division.

In this country, work is underway at Pennsylvania State University to determine if harmful bacteria really do survive in salty foods when heated in the microwave.

Until the data is in, consumers should continue to follow safe microwave cooking practices, using a meat thermometer or temperature probe to check meat, poultry and casseroles for doneness. Check the temperature in several spots. Cover foods when cooking in the microwave and observe standing times given in the recipe.

—Diane VanLonkhuyzen, Barbara O'Brien

FSIS Head Named to Prestigious Health Education Commission

Dr. Lester M. Crawford, administrator of USDA's Food Safety and Inspection Service, has been named to the Pew Health Professions Commission.

Headquartered at the Duke University Medical Center, Durham, N. C., the Commission is sponsored by the Pew Charitable Trusts, the nation's fifth largest philanthropy.

Charged with developing new approaches to education for the health professions to make curricula more responsive to changing national health care needs, Commission membership is drawn from leaders in the health care educational, delivery and policy communities.

"Dr. Crawford is uniquely qualified to serve on the Commission," said Jo Ann Smith, USDA Assistant Secretary for Marketing and Inspection Services.

"He is an internationally recognized expert in food safety, with leadership experience in government, academia and the private sector. His selection as a representative of USDA underscores the growing importance of food safety to overall public health."

"I see a great challenge here," said Dr. Crawford, "in that medical personnel practice what they're taught, so if tomorrow's health professionals are going to be conversant with vital food safety concerns, that instruction needs to be a well-structured part of their formal course work."

A veterinarian with a doctorate in pharmacology, Dr. Crawford has been heading FSIS since 1987. Prior to that, he was head of FDA's Center for Veterinary Medicine.

—Mary Ann Parmley

Who Needs Foodborne Illness???...

"We hope that will be the reaction of junior high students who watch 'The Danger Zone,' USDA's new quasi-horror film on the dangers of improper food handling," says project manager Marjorie Davidson.

Named for the temperature range from 40-140° F where most bacteria multiply quickly in food, the video stars an evil short-order cook, Fester, who tries to lure unsuspecting students into eating food that's stayed too long in the zone.

"We thought it was important to do a food safety video for teens," says Davidson, "because American family life has changed so much recently. Today teenagers prepare an average of two family meals a week. Our video teaches these new food preparers the safe food handling basics."

The complete teaching package includes a 23-minute video, a colorful poster and a teacher's guide with learning activities designed specifically to meet the curriculum needs of science, health and home economics teachers.

Teachers interested in ordering the video should contact Modern Talking Picture Service, 5000 Park St., North, St. Petersburg, Fla. 33709. Phone: 1-800-237-4599. Price? Only $28.50.

—Laura Fox

Hear it on the Hotline

To hear the latest food safety information, call USDA's Meat and Poultry Hotline

1-800-535-4555

10:00 am–4:00 pm Eastern Time (Washington, DC 447-3333)

Professional home economists will answer your questions about proper handling of meat and poultry, how to tell if it is safe to eat, and how to better understand meat and poultry labels.